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IS 570 (1964): Methods for determination of universal count of jute yarn [TXD 1: Physical Methods of Tests]

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**“Knowledge is such a treasure which cannot be stolen”**





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*Indian Standard*  
METHODS FOR  
DETERMINATION OF UNIVERSAL  
COUNT OF JUTE YARN  
(Revised)

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INDIAN STANDARDS INSTITUTION  
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NEW DELHI 110002

*Indian Standard*

METHODS FOR  
DETERMINATION OF UNIVERSAL  
COUNT OF JUTE YARN

*(Revised)*

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*Indian Standard*  
METHODS FOR  
DETERMINATION OF UNIVERSAL  
COUNT OF JUTE YARN  
*(Revised)*

**O. F O R E W O R D**

**0.1** This Indian Standard (Revised) was adopted by the Indian Standards Institution on 7 August 1964, after the draft finalized by the Textile Standards Sectional Committee had been approved by the Textile Division Council.

**0.2** This standard was first published in 1954 in which all quantities and dimensions were expressed in fps system units. With the adoption of metric system in India, the Sectional Committee decided to revise the standard with a view to changing over to the metric system. Therefore, all quantities and dimensions in the revision have been expressed in the metric system. This opportunity has been taken to make some modifications. In the original standard, four methods each were prescribed for determining the grist (count) of yarn under standard atmospheric conditions and prevailing atmospheric conditions. In this revision, this procedure has been simplified and only one method each is prescribed for determining the universal count of jute yarn under standard atmospheric conditions and prevailing atmospheric conditions.

**0.3** In reporting the result of a test or analysis made in accordance with this standard, if the final value, observed or calculated, is to be rounded off, it shall be done in accordance with IS : 2-1960\*.

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**1. SCOPE**

**1.1** This standard prescribes two methods for determination of universal count of jute yarn. The methods are applicable to single, plied or cabled yarn.

**NOTE** — In the case of plied or cabled yarn, the methods are applicable for determination of its resultant count.

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\*Rules for rounding off numerical values (*revised*).

## 2. PRINCIPLE

**2.1** The first method is based on determining the universal count of yarn after conditioning the test specimens in the standard atmosphere. The second method is based on determining the weight of the specimen by drying it in a drying oven and calculating, from this weight, its conditioned weight by adding the moisture regain value.

## 3. TERMINOLOGY

**3.0** For the purpose of this standard, the following definitions shall apply.

**3.1 Grist** — The weight in pounds of one spindle (14 400 yd) of yarn.

**3.2 Universal Count, in tex** — Universal count is a number indicating the weight of yarn per unit length, the basic unit of which is the tex. When universal count of yarn is expressed in tex, the count value indicates the weight in gram of one kilometre of yarn.

**NOTE** — The weight per unit length of fibres as well as of textile products like ropes, rovings, etc, may also be expressed in universal count, and in such cases, the following sub-multiple and multiple units may be used to avoid small fractions and large numbers respectively:

$$1 \text{ m tex (millitex)} = 0.001 \text{ tex}$$

$$1 \text{ k tex (kilo-tex)} = 1000 \text{ tex}$$

## 4. SAMPLING

**4.1 Lot** — A quantity of jute yarn of one definite count and quality delivered to one buyer against one despatch note.

**4.2** The conformity of a lot to a specification shall be determined on the basis of test carried out on the sample selected from the lot.

**4.3** Unless otherwise agreed upon between the buyer and the seller, the total number of bales (or trusses) to be taken at random from a lot shall be in accordance with the requirements of Table 1.

**TABLE 1 NUMBER OF BALES (OR TRUSSES) TO BE SELECTED FROM THE LOT**

NO. OF BALES (OR TRUSSES) IN A LOT	NO. OF BALES (OR TRUSSES) TO BE TAKEN
2 to 25	1
26 " 50	2
51 " 75	3
76 " 100	4
Above 100	3 percent of the additional bales

**4.4** One bundle of yarn shall be drawn from each of the bales (or trusses) drawn as in Table 1. However, if the number of bundles in a bale (or truss) is more than 25, two bundles shall be drawn from each of the bales (or trusses) drawn.

**4.5** In case the yarn is on cones, the number of cones to be taken at random from the lot shall be in accordance with the requirements of Table 2.

**TABLE 2 NUMBER OF CONES TO BE SELECTED FROM THE LOT**

<b>NO. OF CONES IN THE LOT</b>	<b>NO. OF CONES TO BE SELECTED</b>
Up to 100	2
101 " 150	3
151 " 500	5
501 " 1 000	8
1 001 " 3 000	13
3 001 and above	20

**4.6** From each of the bundles drawn as in 4.4, two skein, each 100 m long, shall be reeled off from different parts of the bundle, on a wrap reel with a girth of two metres. When being reeled, the yarn shall be kept under sufficient tension to avoid kinks, curls and slacks in the yarn on the one hand, and stretch on the other, operating the reel at a speed of 100 to 200 rev/min. In case the yarn is on cones, one 100 m long skein shall be reeled off from each cone drawn as in 4.5. The skeins so reeled shall constitute the test specimens.

**4.6.1** In case the procedure prescribed in 4.6 provides less than 10 test specimens from the lot, further test specimens shall be taken from the selected bundles or cones (see 4.4 and 4.5) to bring the number of test specimens up to 10.

## **5. ATMOSPHERIC CONDITIONS FOR TESTING**

**5.1** The test prescribed in 8.2 shall be carried out in a standard atmosphere at  $65 \pm 2$  percent relative humidity and  $27^\circ \pm 2^\circ\text{C}$  temperature (see also IS:196-1950\*).

## **6. CONDITIONING OF SPECIMENS**

**6.1** When the test is to be carried out by the method prescribed in 8.2 prior to evaluation, the test specimens shall be left in the standard atmosphere at  $65 \pm 2$  percent relative humidity and  $27^\circ \pm 2^\circ\text{C}$  temperature

\*Atmospheric conditions for testing.

for 48 hours in such a way as to expose, as far as possible, all portions of the specimens to the atmosphere.

## 7. APPARATUS

**7.0** For the purpose of this test, the following apparatus shall be used.

**7.1 Drying Oven**—of a suitable capacity to hold about 500 g of yarn, preferably of the ventilated type with positively induced draught, capable of maintaining an inside temperature of 105° to 110° and provided with a balance which weighs correct to 0·1 g.

**7.2 Pan Balance**—with weights in grams and capable of weighing accurate to 0·1 g.

## 8. PROCEDURE

**8.1** Determine the universal count of yarn by the method prescribed in **8.2** or **8.3** as agreed to between the buyer and the seller or as specified in the material specification. In case of dispute, however, the method specified in **8.3** shall be followed.

### 8.2 First Method

**8.2.1** Take one of the conditioned skeins (*see 6.1*) constituting the test specimens and weigh it correct to the nearest 0·1 g. Calculate its universal count in the manner prescribed in **9**.

### 8.3 Second Method

**8.3.1** Take a skein of yarn constituting the test specimens (*see 4.5*) and dry it to constant weight at 105° to 110°C in the drying oven. Determine its constant weight. Stop the draught through the oven during weighing. Take the weight to be constant when the difference between the two consecutive weighings at an interval of 20 minutes is less than 0·1 percent of the first weight.

**NOTE**—In order to avoid risk in oil evaporation, the draught in the drying oven shall not be continued throughout the drying period but shall be in operation only intermittently.

**8.3.2** Calculate the conditioned weight of the skein by the formula given below:

$$\text{Conditioned weight of the skein} = \frac{A(100 + R)}{100}$$

where

*A* = oven-dry weight, in g, of the specimen, and  
*R* = moisture regain value of 17 percent.

## 9. CALCULATION AND REPORT

**9.1** Calculate the universal count of the test specimen using the formula given below:

$$\text{Universal count, in tex} = \frac{W}{L} \times 1000$$

where

$W$  = weight, in g, of the test specimen determined either as in **8.2.1** or **8.3.2**; and

$L$  = length, in m, of the test specimen.

**9.2** Repeat the procedure prescribed in **8.2** or **8.3** with the remaining test specimens in the sample and determine their universal count in tex.

**9.3** Calculate the mean of all the values and report it as the universal count, in tex, of the yarn in the lot. Report also the method followed for determining the universal count.

## 10. CONVERSION OF GRIST INTO UNIVERSAL COUNT AND VICE VERSA

**10.1** For conversion of grist to universal count in tex, use the following formula:

$$T_t = T_g \times 34.45$$

where

$T_t$  = universal count, in tex; and

$T_g$  = grist, in lb.

**10.2** For conversion of universal count to grist, use the following formula:

$$T_g = T_t \times 0.029$$

where  $T_g$  and  $T_t$  are same as in **10.1**.

**10.3** For convenience, Table 3 may, wherever possible, be used for converting grist values into universal count in tex.

**TABLE 3 GRIST TO UNIVERSAL COUNT, IN tex**  
*( Clause 10.3 )*

<b>GRIST</b>	<b>0</b>	<b>10</b>	<b>20</b>	<b>30</b>
	<i>tex</i>	<i>tex</i>	<i>tex</i>	<i>tex</i>
0	—	345	690	1 035
0·5	—	360	705	—
1·0	—	380	725	—
1·5	—	395	740	—
2·0	—	415	760	—
2·5	85	430	775	—
3·0	105	450	790	—
3·5	120	465	810	—
4·0	140	480	825	—
4·5	155	500	845	—
5·0	170	515	860	—
5·5	190	535	880	—
6·0	205	550	895	—
6·5	225	570	910	—
7·0	240	585	930	—
7·5	260	605	945	—
8·0	275	620	965	—
8·5	295	635	980	—
9·0	310	655	1 000	—
9·5	325	670	1 015	—

NOTE — tex values rounded off to nearest 5 units.

# INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

## Base Units

Quantity	Unit	Symbol
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

## Supplementary Units

Quantity	Unit	Symbol
Plane angle	radian	rad
Solid angle	steradian	sr

## Derived Units

Quantity	Unit	Symbol	Conversion
Force	newton	N	1 N = 1 kg·m/s <sup>2</sup>
Energy	joule	J	1 J = 1 N·m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V·s
Flux density	tesla	T	1 T = 1 Wb/m <sup>2</sup>
Frequency	hertz	Hz	1 Hz = 1 c/s (s <sup>-1</sup> )
Electric conductance	siemens	S	1 S = 1 A/V
Pressure, stress	pascal	Pa	1 Pa = 1 N/m <sup>2</sup>

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